# GEOINT Interoperability Program:

## Addressing GEOINT Interoperability in DoD Acquisition

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# Overview

- NGA & GEOINT Interoperability
- GEOINT Interoperability Program
- Problem Quantified
- GEOINT Seal of Approval
- GEOINT Interoperability Qualification Cycle
- Notional GEOINT Coordinated Test Environment
- Seal Process Scope and Status
- GEOINT Interoperability Responsibilities

# NGA & GEOINT Interoperability

## Direction

### 10 U.S.C. 441(d)

***SecDef in consultation w/DNI:***

"… take all necessary steps to ensure the full availability and continued improvement of imagery intelligence support for all-source analysis and production."

### DoDD 5105.60

***SecDef designates D/NGA as DoD GEOINT Manager to:***

- "… **prescribe, mandate, *and enforce standards and architectures related to GEOINT …"***
- Exercise functional management and oversight of the NSG, including technical oversight of NSG tactical elements, to **ensure interoperability** between existing and future NSG systems, connectivity between national and tactical systems, and modernization of tactical systems."
- **"disseminate and facilitate sharing of GEOINT … consistent with DoDD 8320.02"**

### CJCSI 3170.01H
### CJCSI 6212.01F
### DoDD 8320.02*
### DoDI 3115.15
### DoDI 8330.aa
### DoD 5000 series

## Responsibility

### 50 U.S.C. 403-5(b)(2)(D)(i)

***SecDef through NGA with representation from IC:***

"… prescribe technical architecture and standards related to imagery intelligence and geospatial information and **ensure compliance with such architecture and standards**"

### ICD 113

***IC Elements shall***

- participate in the co… **with function-related standard…** the Functional Manager (FM)."

***DNI delegates authority to FMs to:***

- "… (prescribe) **function-specific interoperability standards** for function-dependent technical architectures …"
- "… (develop) a functional enterprise architecture for the function …"
- "develop, coordinate, **and oversee the issuance and implementation** of IC standards in training and tradecraft, reporting, requirements, evaluation measures, and other areas within their respective functions …"

### NSG Ds Including GEOINT Interoperability*

## Authority

### E.O. 12333 1.3(b)(12)(A)

***D/NGA appointed GEOINT FM:***

GEOINT Functional Manager (FM) may be charged by DNI with "… developing and implementing strategic guidance, policies, and procedures for activities related to a specific intelligence discipline or set of intelligence activities; set training and tradecraft standards; and ensure coordination within and across intelligence disciplines and Intelligence Community elements and with related non-intelligence activities."

### ICD 115
### ICD 501
### ICD 801
### ICS 500-20

* Data shall be made "visible, accessible, understandable, interoperable, trusted, and responsive"

# GEOINT Interoperability Program

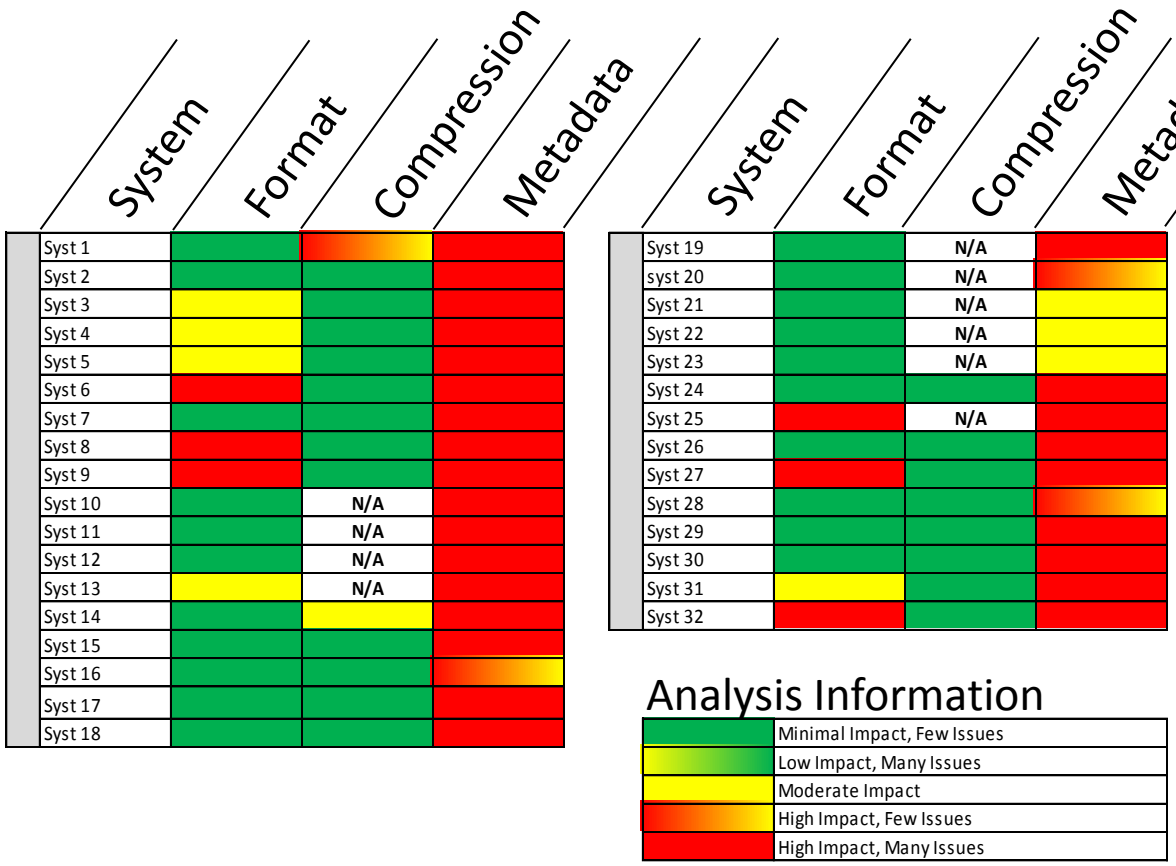
- **Direct Program Support**
  - Work with individual programs to support selection, implementation and testing of GEOINT standards
- **NSG Extended Support**
  - Services - Program Executive Officer (PEOs) at a strategic level
  - AT&L and UAS TF (USIP development, compliance, remediation)
- **Acquisition Document Review/Support**
  - Review Joint Capabilities Integration and Development System (JCIDS) documentation and Information Support Plans
  - Review program acquisition documentation
  - Support write/rewrite of DoD, JCS and IC documents
- **GEOINT Seal of Approval**
  - Enterprise Challenge 2012 – conducted limited proof-of-concept to validate selected test performance measures
  - Phase 1: 2013 pilot programs
- **Standards Implementations and Resolutions**
  - Advocate for new/updated standards based on user needs

**GEOINT Interoperability Program** is an outreach, advisory and coordination resource working to improve GEOINT data and services interoperability across the NSG:

- **Expertise**
  - GEOINT Phenomenologies (FMV, EO/IR, MSI, HSI, and SAR imagery, MTI, LIDAR, OPIR, NGA foundation products)
  - GEOINT Exploitation Sciences (photogrammetry, precision GEOINT, data fusion, image quality, web services)
  - GEOINT Standards
  - GEOINT Policy and Implementation
  - Relevant, diverse Service experience (USA, USAF, USN)
- **Support**
  - ACAT programs
  - Joint Capability Technology Demonstrations
  - Quick Reaction Capability programs
  - Testing Organizations
  - Standards process for data management and architecture

# Problem Quantified: Study of Imagery Data

## Known fact: Desired interoperability is not yet delivered

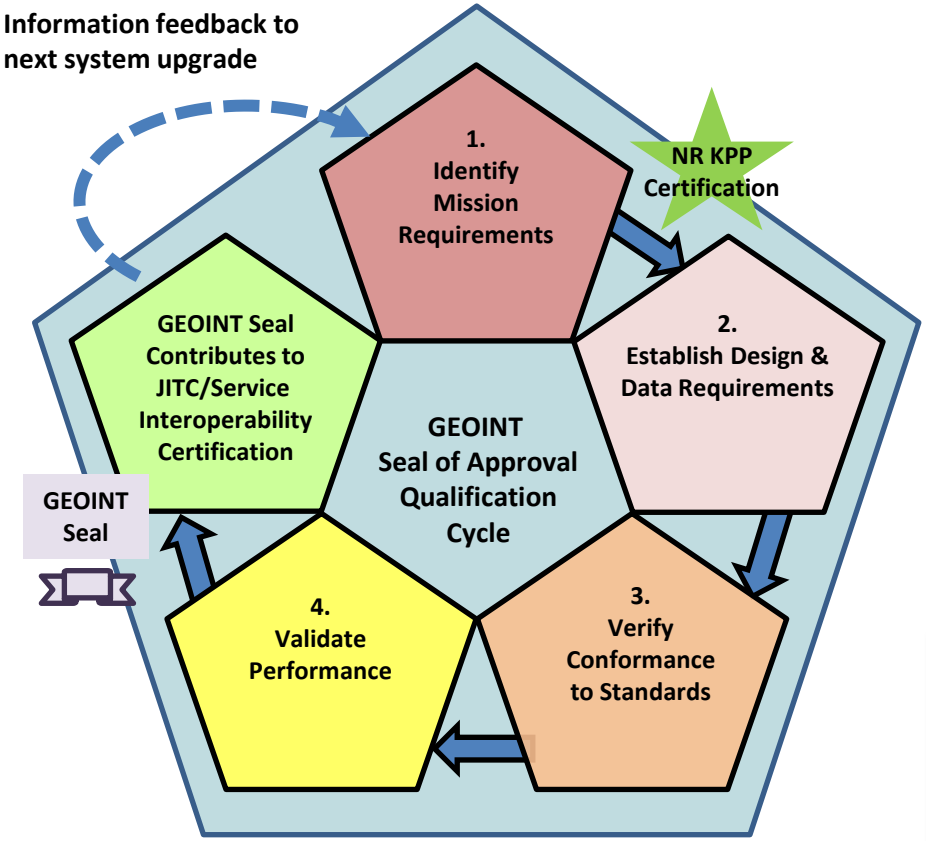



**Issues arise from:**

- **Inconsistency identifying necessary metadata and related standards**
- **Lack of clear requirements language**
- **Insufficient testability**

**Testing confirms substantial lack of GEOINT standards conformance**

# Interoperability: GEOINT Seal of Approval



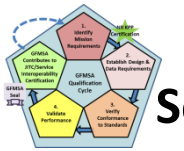

**GEOINT Seal of Approval enables the DoD GEOINT Manager to…**

- **Enforce standards and architectures** related to GEOINT (50 USC 403-5)
- **Enable interoperability** between existing and future NSG systems
- **Facilitate sharing of GEOINT** by the most effective and expeditious means consistent with DoDD 8320.02, Data in a Net-Centric DoD to ensure data shall be made **"visible, accessible, understandable, interoperable, trusted, and responsive"**

**Provides quantitative metrics** for GEOINT support capabilities and progress reports to weigh DoD acquisition investments

**GEOINT Seal of Approval Objective:**
Enable the accurate, efficient decomposition of GEOINT interoperability criteria into testable and validatable requirements to ensure realization of critical and desired mission objectives.
***Endgame: Multi-purpose GEOINT available NSG-wide.***

# GEOINT Interoperability Program and Seal of Approval Process



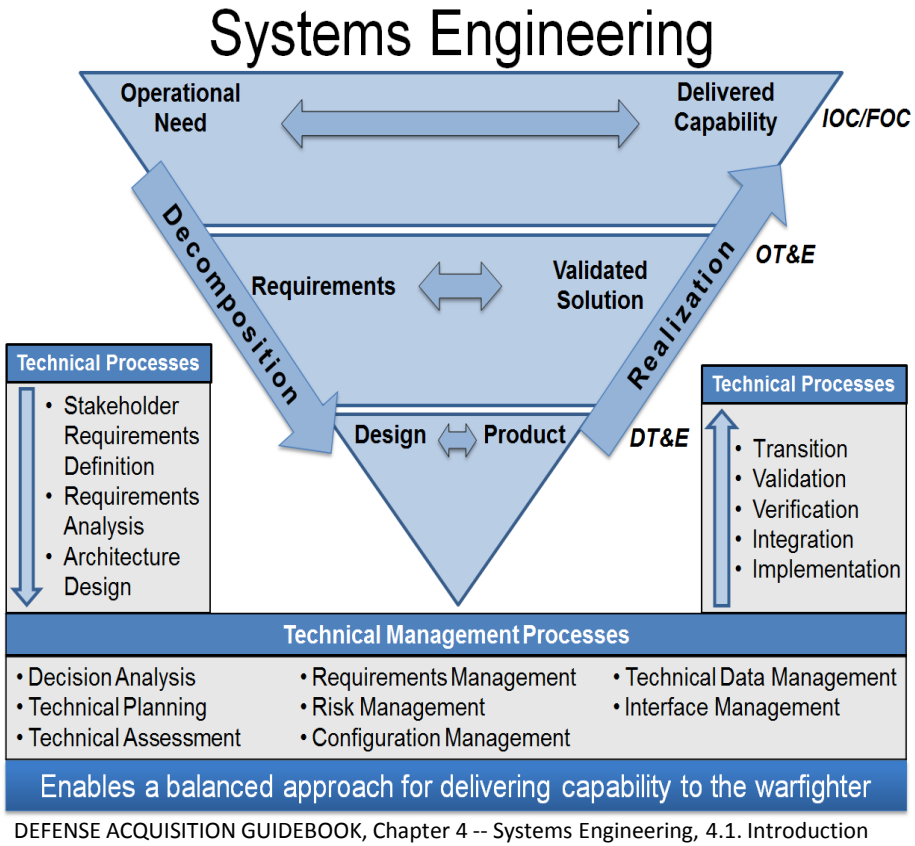
## Seal Process and Purpose

Designed **to integrate well-known system engineering processes** to capture GEOINT capabilities.

- Planning and Mission Analysis
- Requirements Analysis and Development
- Architecture and System Design
- Implementation and Integration

Provides **visibility of program specific DISR/ER2 mandated GEOINT requirements** in acquisition development to ensure they are identified, designed, implemented, integrated and validated.

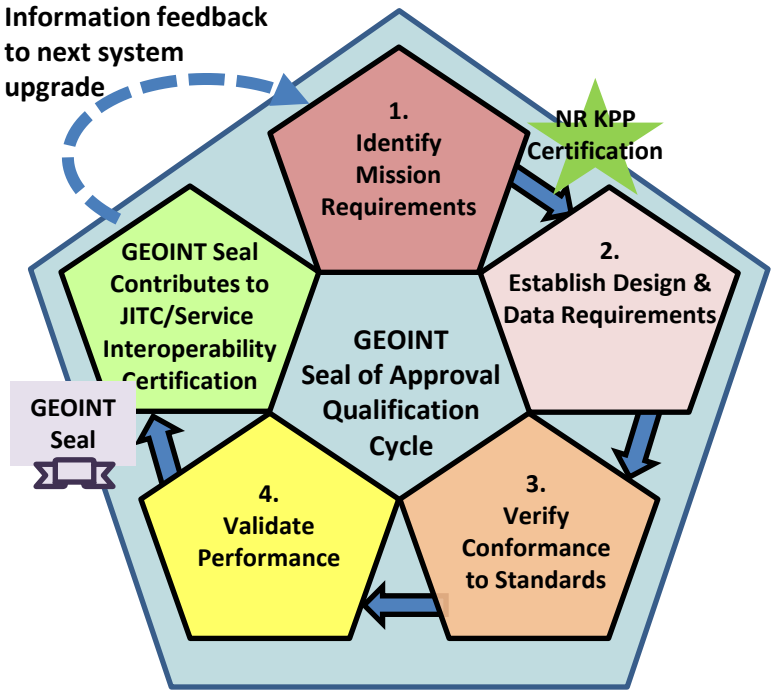
**GEOINT Seal of Approval is *recognition*** issued by the NSG when an IT component is found to meet GEOINT standards conformance and interoperability qualification criteria.




DEFENSE ACQUISITION GUIDEBOOK, Chapter 4 -- Systems Engineering, 4.1. Introduction

**GEOINT Seal of Approval programs highlighted by Director/NGA in her Annual Brief To Congress**

# Seal of Approval Qualification Cycle



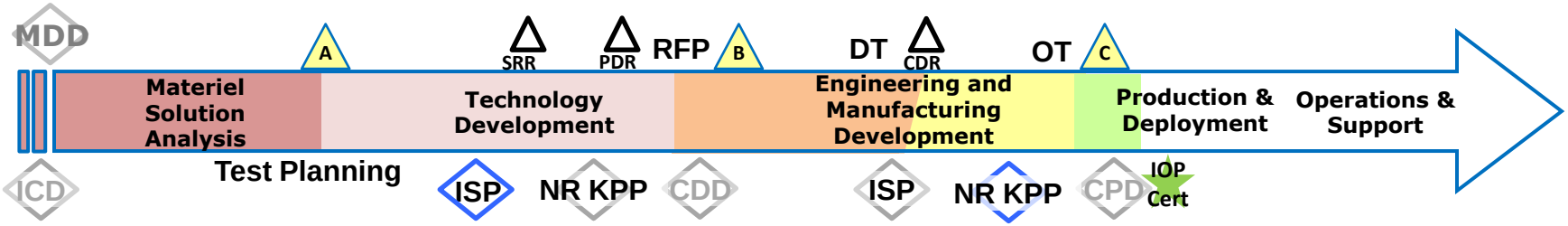

1) ***Identify Mission Requirements*** and associated Measures of Effectiveness (MOE) and Measures of Performance (MOP)

2) ***Establish Design & Data Requirements*** and establish system and data content design in conformance with applicable GEOINT standards

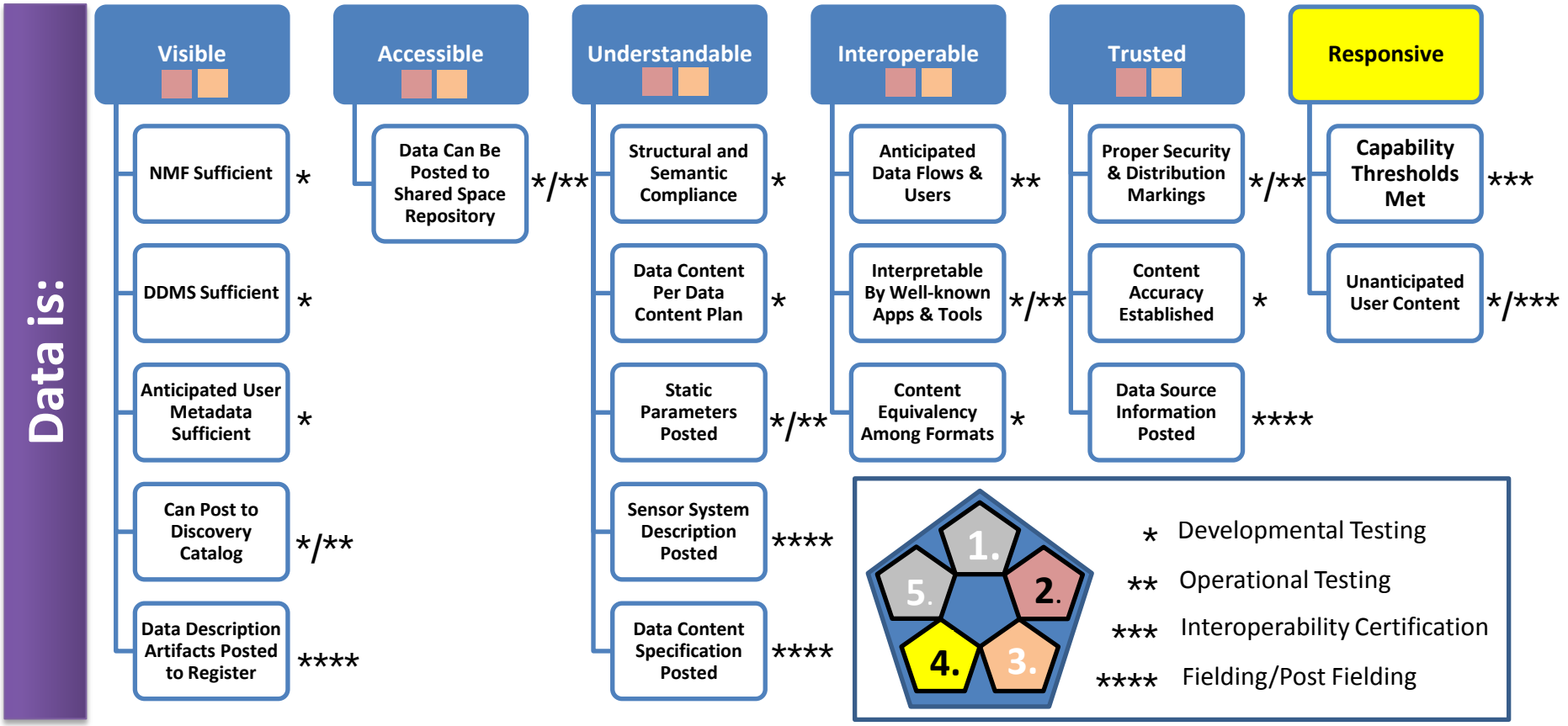
3) ***Verify Conformance to Standards*** through test and evaluation to ensure data and services conform with both the GEOINT standards and the system design

4) ***Validate Performance*** through test and evaluation that the performance of the conforming design, data and services fulfill the mission capability requirements established in step 1

5) ***GEOINT Seal Contributes to JITC/Service Interoperability Certification***. Submit test reports, certifications and statuses substantiating GEOINT Seal qualification to the NSG Functional Lead for Architecture and Standards.



# Seal of Approval Qualifications: Example for Gridded Data




**Each Seal of Approval Qualification has a set of GEOINT-aware 'criteria' used to measure success**

GEOINT Seal of Approval Qualifications derived from *DoD Net-Centric Data Strategy*

# Data Assets Tested for GEOINT Seal of Approval Qualification

**Imagery & Gridded Data**
- Data File
- Data Stream
- Embedded Metadata
- Content is Dynamic

**Static Parameters (e.g.)**
- Metadata
- Calibration
- Look Up Table/Registers

**Data Content Specification**
- Describes Population Plan for:
  - Imagery & Gridded Data
  - Static Parameters
- Content is Static for Tested Configuration

**System Description**
- General Description of the collection system and its capabilities
- Content is Static for Tested Configuration

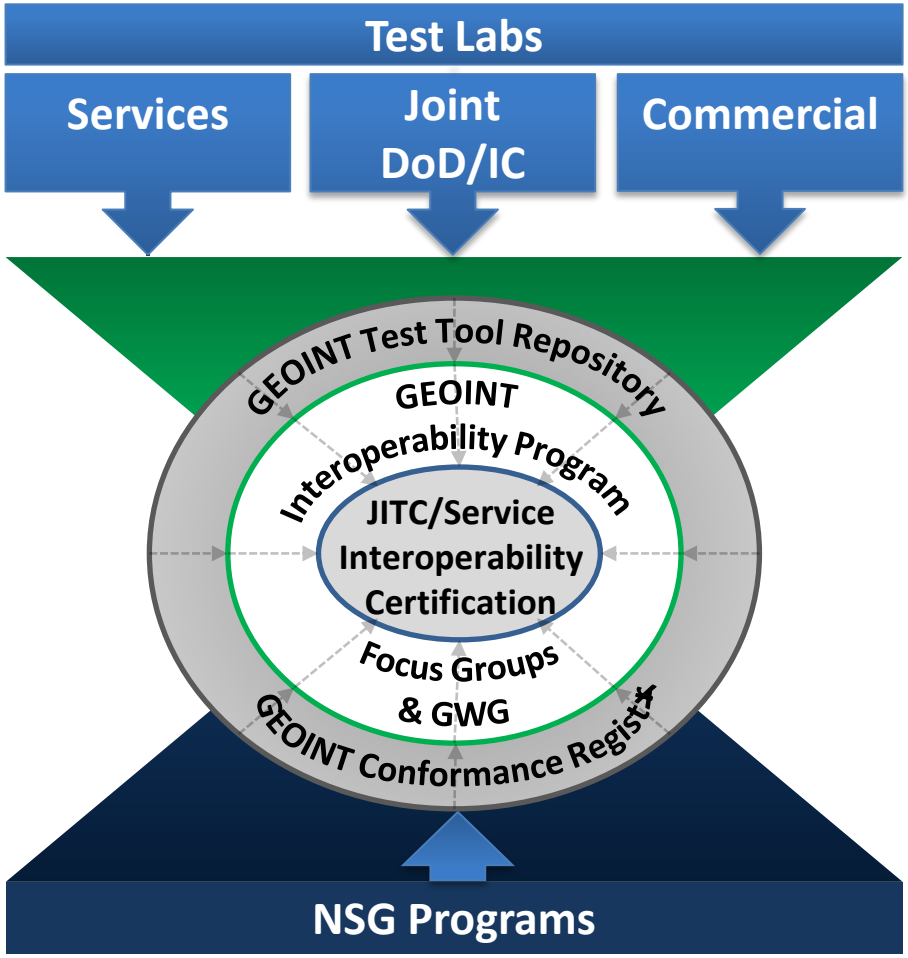
# Notional GEOINT Coordinated Test Environment

## Testing Coordination

- GEOINT Seal of Approval relies on distributed testing
- Test results must be useful to the developer and acceptable for both the Seal of Approval Process and the certifier of interoperability
- Common test tools available across the community required
- Improved configuration management of test tools is high-priority

## Shared Responsibilities

- **Testing Conduct**: Programs
- **Test Lab Infrastructure**: Components
- **Test Capability Development:** GEOINT community, led by Functional Manager




"JITC shall evaluate interoperability test results using a variety of resources including interoperability test and evaluation criteria, measures, and requirements established by intelligence functional managers"

# GEOINT Seal of Approval Scope and Status

## Scope

***Initial Scope (FY13/14) – systems with new requirements for***

- Imagery Collection
- Gridded GEOINT Data

***Second wave (FY14/15)***

- Dissemination libraries and web services
- Other types of Foundation GEOINT

***Follow-on phases***

- Remainder of the TCPED cycle
- IC-ITE integration

## Status

***NSG Directive and Manual***

- GO/FO coordination
- JS J6: Will incorporate into NR KPP Manual
- DAG: will add GEOINT Seal of Approval process to Chapters 4 and 9

***Self-Assist Tools in development***

- On-line resource site, SharePoint
- Guide for PMs
- Sample MoEs/ MoPs for NR KPP
- Suggested RFP language
- Automated Test Tools

***Partial-Assist capabilities***

- Training test organizations to apply Seal of Approval processes
- Continuing reviews of JCIDS documentation and Information Support Plans (ISP)
- Support to select programs

# GEOINT Seal Responsibilities

- DoD and IC Components
  - Include Seal of Approval qualifications in **program requirements**, **design specifications**, and **test plans** for IT and NSS that require any GEOINT standards cited in the DISR and ER2
  - **Provide test results** to NGA that substantiate system performance and conformance against Seal of Approval qualifications
  - **Update systems' GEOINT standards baselines** during incremental upgrades or when interoperability certifications expire
- Certification Authorities
  - Joint Staff J6: Consider GEOINT Seal of Approval when **certifying NR KPP** (CJCSI 6212.01)
  - CIOs: Consider NGA input when **waiving standards** (DoDI 8310)
  - JITC/Services: Consider GEOINT Seal of Approval when **certifying interoperability** (DoDI 8330)

**GEOINT Seal of Approval advances the interoperability of GEOINT throughout the Enterprise by applying GEOINT functional management to interoperability governance**

# GEOINT Interoperability Program OV-1

Air Vehicle

DoD USIP 1.1

OGC Sensor Svcs

FMV Sensor

DoD USIP 1.1
STANAG 4586

Tactical User

Data Link

STANAG 4586

DoD USIP 2.0
OGC Sensor Svc

Ground Station

AV Command & Control
(mission plan, launch/recovery, sensor ops)
First Phase Exploitation (direct action);
Processing
Short Term Data Base
STANAG 4575
STANAG 4559
NITF 2.1
(STANAG 4545)
MISP 6.4
(STANAG 4609)

OGC Web Svcs
OGC Sensor Svcs
NITF 2.1
(STANAG 4545)
MISP 6.4
(STANAG 4609)
DDMS v.4

Global Information Grid / DI2E

OGC Web Svcs
OGC Sensor Svcs
STANAG 4559
NITF 2.1
(STANAG 4545)
MISP 6.4
(STANAG 4609)

Operations Center (DCGS)

Second Phase Exploitation
Long Term Data Base
Dissemination to GIG and/or DI2E

STANAG 4559
NITF 2.1
(STANAG 4545)
MISP 6.4
(STANAG 4609)
DDMS v.4

Libraries and Exploitation

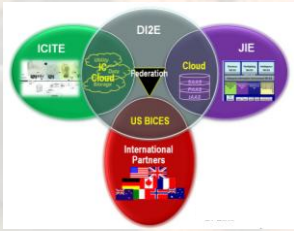
OGC Web Svcs
OGC Sensor Svcs

BICES/CENTAUR

STANAG 4559
OGC Web Svcs
OGC Sensor Svc

CSD

DTE




OGC Stnds
STANAG 4559
NITF 2.1
(STANAG 4545)
MISP 6.4
(STANAG 4609)
DDMS
NMF

*Listed standards may not be representative of the current baseline